

Module Code	MA2022	Title	Calculus			
Credits	02	Hours/Week	Lectures	02	Pre-requisites	MA1012 MA1022
			Lab/Tutorials	-		

Learning Objectives

- To understand the concepts of application of parametric curves in space.
- To understand the concept of coordinate transformation
- To understand the vector field and integration on curves and its application
- To understand the use of complex variable applied in mathematical methods used in modeling physical system,
- To understand the calculus such as integration, differentiation applied to complex variable

Learning Outcomes

- To do vector differentiation and integration and to find vector and scalar quantities such as Div, Grad, Curl
- To understand the meaning of Div, Grad, Curl and its applications
- To apply three important theorems , Divergence, Strokes and Green, in various situations
- To apply Cauchy's integral formula
- To perform contour integration techniques
- To apply conformal mapping in physical system modeling

Outline Syllabus

Vector Calculus

Vector differentiation and differential operators, space curves and line integral, surface and surface integrals. Divergence theorem, Stroke's theorem, Greens theorem in plane. Some basic applications.

Complex Variables

Analytical function and Cauchy-Reimann equation, Cauchy's integral formula and applications. Taylor and Laurent's series, contour integration. Introduction to conformal mapping